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Banks of the Cumberland River, near Nashville, Tennessee. Summer.

A remarkable and handsome little species of *Clematis*, a member of the section Viorna, and, although more closely related to *Clematis Viorna* than to any other of its relatives, it is not very suggestive of that species. Dr. A. Gattinger, for whom it is named, discovered some plants on the banks of the Cumberland river, above Nashville, Tennessee, several years ago. He at once saw that it was different from any other species with which he was acquainted; he collected specimens and grew the species in his garden, where the plants have since thrived, the species holding all the characters it exhibited in its native habitat.

The slender habit, the densely glandular pubescence of its foliage, the small flowers with caudate sepals and the short plumose styles all serve to separate *Clematis Gattingeri* from *Clematis Viorna.*

J. K. SMALL.

Reviews.

Flora of the Southern United States. By A. W. Chapman. Third Edition. Pp. 655. Cambridge, 1897.

It is now over thirty years since the first edition of Chapman's Southern Flora was given to the public; and during this time the author has had the satisfaction of seeing his work become and remain the standard text-book of systematic botany for the region involved. At an advanced age, Dr. Chapman has just brought to completion a third edition of his flora, successfully capping a botanical career covering nearly three-quarters of a century, and he is entitled to the hearty congratulations of botanists throughout the country, by whom he is universally held in affection and esteem.

The book has been entirely reprinted from fresh plates, and the typography and superior grade of paper employed are altogether satisfactory. A hasty proof-reading has however resulted in a number of unfortunate typographical errors, as *Pimpernella, Anemorella,* etc. It is gratifying to observe that the substance of the long appendix to the second edition has been properly incorporated in the text, so that students will no longer need to search for a given species under two distinct headings.

In the style of presentation and in nomenclature, Dr. Chapman adheres closely to old traditions, preferring group-characters interspersed through the specific descriptions rather than artificial keys placed at the commencement of a genus, the usage in most modern systematic works. The disadvantage of the former method is the difficulty which the eye encounters in correlating two or more headings when confused by an intricate maze of daggers and asterisks. Yet the task of constructing systematic keys where none had previously existed would have been too great a labor to undertake in a work intended primarily as a revision. Neither could Dr. Chapman be expected to undertake the bibliographical research necessary to place the nomenclature of his flora on a modern basis. But it is to be regretted that he did not see fit to make such corrections as recent studies have shown to be essential, such as the substitution of *Anemone quinquefolia* L. for the European *A. nemorosa*, and of *Viola tenella* Muhl., for *V. tricolor* var. *arvensis* DC. Many of these changes were made even in the first fascicle of Gray's Synoptical Flora, issued last year, and thus certainly bear the stamp of conservative authority.

The lack of all system in the employment of citations is, as it has always been, a defect in this work. Botanical bibliography has now assumed such enormous proportions that full citations should be given wherever possible; and in a manual in which space does not permit the practice, careful attention should be bestowed on the verification of references. Dr. Chapman indicates new species for the most part by an appended "*n. sp.*," but occasionally these receive no indication whatever, as in *Eupatorium incisum*, requiring an inspection of all the other editions to ascertain that the plant is here described for the first time. The absence of an authority in general signifies a new name given to an old species, as "*Viburnum molle* Michx., var.? *tomentosum*," the synonym cited being "*V. scabrellum* Flora," and the reader being left to infer that the "Flora" mentioned is an earlier edition of the same work, and not the name of a botanist.

In his earlier writings Dr. Chapman was inclined to be more liberal than his contemporaries with regard to generic limitations, recognizing such genera as *Atragene*, *Conoclinium*, *Diplopappus*, *Leptopoda*, *Quamoclit*, *Batatas* and *Pharbitis*. He has now adopted a more conservative view, uniting all the above mentioned genera and many others, with their nearest allies; in this, however, he is by no means consistent, for we find *Hepatica* included in *Anemone*, while *Actinomeris* is distinguished from *Verbesina* and if *Otophylla* and *Dasystoma* are both to be separated from *Gerardia*, *Monniera*, in the same family, should most certainly be removed from *Herpestis*, and *Sophronanthe* from *Gratiola*.

About a dozen new species and innumerable varieties are described in the course of the work, several of them being unpublished names of Dr. Engelmann and other writers. The author has adhered to a rigid rule of exclusion in connection with the numerous new forms proposed during the last few years by other students of southern botany, remarking in the preface, "In a region so vast * * * * there still must remain much to reward the labors of future explorers, and many new species have been proposed by recent collectors as occurring within my limits. These, which are unknown to me, when duly confirmed, * * * * will have place in future issues."

As a future issue embracing any extended revision is a matter of some uncertainty, it is to be deplored that Dr. Chapman did not make some effort to obtain material for examination at least in those genera in which he himself contemplated the establishment of new species. The omission of these well-marked forms is less of an injustice to the botanists who have devoted time and careful study to the plants than it is to the field student who constantly discovers specimens which he cannot match with any of those described. It would be difficult for the chance collector of *Clematis Addisonii* to reconcile it with the diagnosis of *C. Viorna*, or *Nolina Brittoniana* with that of *N. Georgiana;* and yet there is no other recourse for one who is dependent upon this flora alone. We are glad to note, however, that many excellent species of Buckley, Curtis and Shuttleworth, long suppressed by other writers, have been properly reinstated by Dr. Chapman. The chief annoyance to botanists resultant from the omission of recently described species will be the addition to an already overburdened synonymy which some of the very numerous new varieties must make.

Such defects as these, are, however, attributable rather to the conditions under which the work was carried out than to any intentional discrimination on the part of the author. A revision can never assume the proportions of an entirely new book; and the attempt to remodel every feature of a portrait often destroys the likeness. At least until the production of some more comprehensive and more modern volume Dr. Chapman's flora will be indispensable to every student of southern botany.

C. L. P.

Catalogue of the Hanbury Herbarium, in the Museum of the Pharmaceutical Society of Great Britain. Pp. 160. Compiled by E. M. Holmes, Curator of the Museum. Published by the Society.

The Daniel Hanbury Herbarium was donated to the Pharmaceutical Society of Great Britain by Mr. Thomas Hanbury, brother of its deceased owner, on condition that it be kept separate from all other collections, and carefully guarded. Thus maintained, it has been of the greatest service, not only to British pharmaceutical botanists, but to many foreigners who have visited it, or who have sent specimens for comparison to its learned and obliging curator.

The families represented in the Catalogue are arranged in the Benthamian sequence, while the species in each are arranged alphabetically. The specimens under each species are lettered, the character of each indicated and the locality and date of collection stated. Notes and extracts from letters which accompany the specimens in the herbarium are also printed. Most of these are by the collectors, but in many cases they represent critical correspondence concerning them from specialists. The number of species catalogued is 610, the number of specimens probably three times as great. Appendix No. 1 is a list of books quoted in the herbarium, No. 2, a list of the herbaria so referred to, and there is a copious index giving the common as well as the botanical names. There is no need of such a catalogue as this in the United States, as we have no such collection on any extensive scale.

H. H. R.

Demonstration of Absorption of Carbon Dioxide and of the Generation of Oxygen by Diatoms. By T. Chalkley Palmer. Proc. Acad. Nat. Sciences, Phila. F. 1897.

This paper describes a method of demonstrating the normal process of carbon dioxide assimilation in diatoms. It rests upon a color test and is substantially as follows: A dish of suitable size and shape is filled with spring water tinted pale red by a solution of haematoxylin. A glass tube is filled with this solution, its mouth closed with a rubber stopper in which a quill tube is inserted and the whole hung over the dish so the quill tube dips under the surface. Carbon dioxide from the lungs is blown into the remainder of the water in the dish until it loses its reddish tint and becomes brown. Two tubes are now filled with this water, into one of which a few clean living diatoms are put. Both tubes are corked and hung in the same manner as the first. On exposing the apparatus to a bright light, gas rises in the tube containing the diatoms and at the same time the color of the liquid begins to change. In about fifteen minutes it is pale red like that in the first tube, the color deepens until it is blood red, showing that the carbon dioxide has disappeared and oxidation has taken place. The diatoms used for this experiment were the long filamentous forms of *Eunotia*, *E. major* of Rabenhorst. E. L. G.

Beiträge zur Moosflora von Nord-Amerika. Dr. Julius Roell. Hedwigia, 36: 41–66. 1897.

This is an enumeration of several collections sent to Dr. Roell from Ohio, Michigan, Wisconsin, Indiana, Arkansas, Missouri, Washington, Labrador and Greenland, with four species collected by himself at New Durham, New Jersey. It includes long critical notes on several species of *Sphagnum*, especially *F. Austini* Sull. and its forms, and the following new species and varieties: *Dicranum Miquelonense* var. *crispatulum*, *Meesia tristicha* var. *Purpusii; Plagiothecium Roesii* Hpe. (*P. Sullivantiae* Sch.) var. *longifolium* Roell; *Hypnum* (*Campylium*) *simulatum* Kindb., *Hypnum pratense* var. *Purpusii* Roell; *Dicranum flagellare* var. *brevifolium* Roell; *Thuidium lignicola* var. *Roellii* Ren. & Card.; *Hypnum arcuatum* var. *ramosum* Roell; *Eurhynchium strigosum* var. *robustum* Roell; *Fontinalis denticulata* Kindb.; *Hypnum fluitans* var.

excurrentinerve Kindb.; *Sphagnum Mendocinum* var. *recurvum* Roell; *S. platyphyllum* var. *molluscum* Roell; and *Weisia Grönlandica* Kindb. The range of several species is greatly extended, notably *Dicranum Miquelonense*, *D. Canadense* and *Mnium decurrens* from New Jersey; *Cylindrothecium concinnum* from Michigan; *Leucobryum sediforme*, *Fissidens Garberi*, *Leptotrichum Schimperi*, *Webera Lescuriana*, *Atrichum xanthopelma*, *Hypnum Coloradense* and *Amblystegium distantifolium* Kindb. from Hot Springs, Arkansas.

E. G. B.

Nouvelles Contributions a la Flore Bryologique du Bresil. V. F. Brotherus. Bih. till K. Sv. Vet.-Akad. Handl. 21: 1–76. 1895.

This contribution includes an enumeration of the collections of M. Mosen, N. Puiggari, W. Schwacke and others. The author has availed himself of the studies on the flora of Brazil made by Duby, Geheeb and Hampe; has received special assistance from Ch. Müller, and has brought together a list of 70 genera and about 300 species including 65 new ones in the following genera: *Amblystegium*, *Anomodon*, *Bryum*, *Campylopus*, *Catharinea*, *Cryphaea*, *Distichophyllum*, *Entodon*, *Eustichia*, *Fissidens*, *Helicodontium*, *Hookeria*, *Hyophila*, *Hypnum*, *Isopterygium*, *Lepidopilum*, *Leucobryum*, *Leucoloma*, *Leucomium*, *Macromitrium*, *Microthamnium*, *Mniadelphus*, *Neckera*, *Papillaria*, *Pilotrichella*, *Prionodon*, *Rhaphidostegium*, *Stereodon*, *Syrrhopodon*, *Thuidium and Trichosteleum.* The largest number of species are found in the genera *Fissidens* and *Hookeria*, with *Campylopus*, *Papillaria*, *Rhaphidostegium* and *Syrrhopodon* also represented by numerous species.

E. G. B.

Die Laubmoose. K. G. Limpricht. Rab. Kryptfl. 4: (3) 129-256. 1897.

This includes parts 29–30 beginning with the remainder of the *Brachytheciums*, describing the two varieties of *B. rivulare* and recognizing *B. latifolium*. *Bryhnia* and *Hyocomium* do not include any American species. Of the four species of *Scleropodium* three are American, including *H. purum*; in *Eurhynchium* there are only 7 out of 22, of these *E. cirrhosum* is described with fruit and three varieties are recognized. In *Rhynchostegium* the only American species, *R. rusciforme*, is described with five varieties, and in *Raphi-*

dostegium, *R. demissum* is figured. The subgenus *Rhynchostegiella* is raised to generic rank with 5 species, of which *H. curvisetum* has been found in America.

E. G. B.

Recherches sur les Bacteriacees fossiles. By M. B. Renault. Ann. Sci. Nat. 65 : 275–349. *pl. 46.* 1896.

Until recent years the most ancient known bacteria were those discovered in the bones and teeth of Egyptian mummies. In 1879 M. Van Tieghem noted their existence in remains of fossil plants from the environs of St. Etienne. M. Renault in this learned and interesting study describes and illustrates numerous species preserved in animal and vegetable fossil remains from various parts of France.

A. M. V.

Proceedings of the Club.

TUESDAY EVENING, MARCH 9, 1897.

There were 32 persons present, President Brown presiding.

The Secretary read a letter stating conditions of a grant of money offered from the Newberry research fund. This letter was from Dr. N. L. Britton as Secretary of the Council of the Scientific Alliance of New York, and indicated that the award for the present year is to be in Geology or Paleontology, to amount to $50, payable July 15, 1897. The award applies to researches yet to be begun or completed, and which are to be embodied in a paper submitted to the Council within three months from the present notification. Each society within the Scientific Alliance is invited to nominate a recipient.

The scientific program was then taken up, the evening being devoted to the subject of Ferns with papers as follows:

1. Mrs. Elizabeth G. Britton, "Notes on some Mexican Ferns," presented, in Mrs. Britton's absence, by Dr. Rusby, with exhibition of numerous specimens, including species of *Pellaea*, *Polypodium*, *Cystopteris* and *Cheilanthes*. Dr. Rusby, having been himself present at their collection, described vividly the tongues of hard, black lava on which the collectors walked, and which was